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CRISTAL HRI 35

References :

Polyol : CRISTAL HRI 35-POLYOL-SL 350 000 **Isocyanate : CRISTAL HRI 35-ISO-SL 000 350**

Definition :

➔ **CRISTAL HRI 35 :**

Clear transparent polyurethane casting resin for the production of massive optical parts and / or inclusion. High refractive index, high UV stability. Countertype of PMMA or PC. Colourable, easy machining and polishing.
REACH-compatible product complying with the following European Directives:

- 2011/65/EU - 2015/863 - 2017/2102/UE (RoHS 1 and 2)
- 2002/96/EC (WEEE)
- 2000/53/EC (ELVs)
- 2000/11/EC

Average physical properties of the components :

	CRISTAL HRI 35 Polyol SL 350 000	CRISTAL HRI 35 Iso SL 000 350	CRISTAL HRI 35 Mix SL 350 350
Aspect – Colour	Colourless transparent liquid	Colourless transparent liquid	Colourless Transparent liquid Colourless Transparent solid
Brookfield LVT viscosity (mPa.s) According to MO-051	400	800	
Density at 25°C According to MO-032	1,28	1,15	1,21

Application properties :

	CRISTAL HRI 35 Polyol SL 350 000	CRISTAL HRI 35 Iso SL 000 350	CRISTAL HRI 35 Mix SL 350 350
Mixing ratio by weight	65	100	
Mixing ratio by volume	58,5	100	
Mixing time at 25°C			2 min.
Potlife on 165g at 25°C According to MO-062			35 min.
Demoulding time at 70°C (on 3mm) According to MO-116			3h
Maximum casting thickness			100 mm
Optimal curing time	3h at 70°C + 16h at 100°C + 24h at room temperature		

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Average mechanical and thermal properties of the cured material :

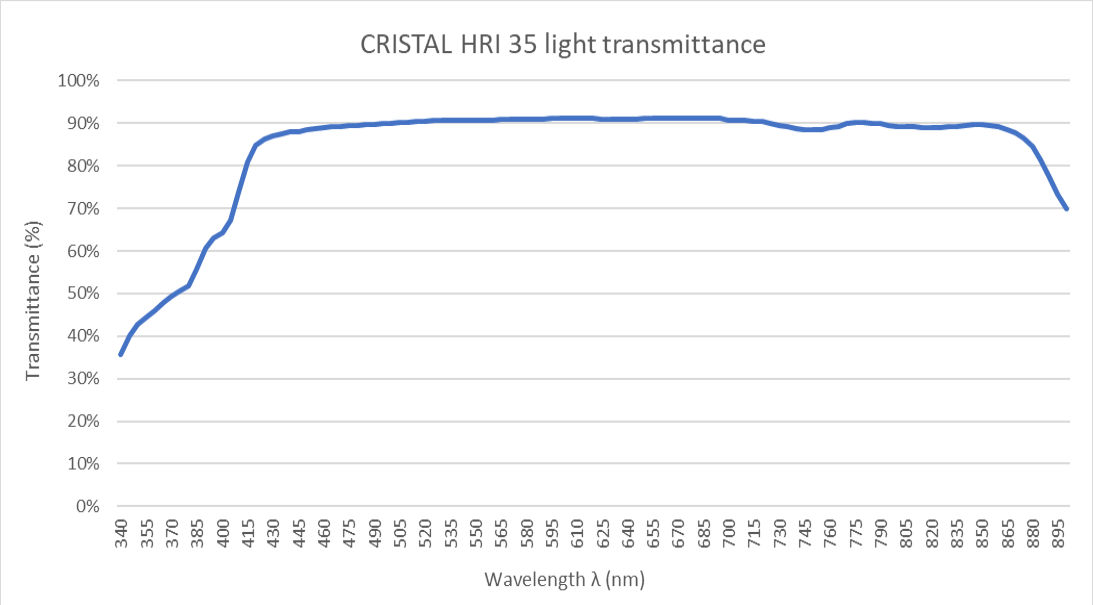
- **Average data obtained after stabilisation : 2h at 70°C + 16h at 100°C + 24h at room temperature**

	Standard	Unit	Values
Shore D1 hardness	ISO 868 : 2003	Shore D1	84
Flexural modulus	ISO 178 : 2011	MPa	2000
Maximum flexural strength	ISO 178 : 2011	MPa	75
Tensile modulus	ISO 527-1 : 2012	MPa	2200
Elongation at break	ISO 527-1 : 2012	%	5
Maximum tensile strength	ISO 527-1 : 2012	MPa	60
Maximum stress at break	ISO 527-1 : 2012	MPa	60
Charpy impact resistance	ISO 179-1 : 2010 unnotched-1eU[b]	KJ/m^2	50
Heat Deflection Temperature (HDT)	ISO 75-2 : 2013 Method B	°C	62

Average optical properties of the cured material :

- **Average data obtained after stabilisation : 2 h at 70°C +16 h at 100°C + 24 h at room temperature**

	Standard	Unit	Values
Refractive index at 20°C	ISO 489 : 1999		1,54
Hazen coloration on a 50 mm thickness	-		< 30
UV resistance -QUV-B accelerated ageing after 1000h (313 nm)	ASTM G154 - ISO 4892-3:2016		4



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Hygiene and safety for using:

Wearing appropriate safety clothes and accessories (gloves, glasses) is advised.
Work in a ventilated room.
For more information, please read the Medical and Safety Data Sheet of the material.

Operating conditions :

➔ **Application process in a vacuum casting machine :**

1. Preheat the polyaddition silicone mould at 70°C.
2. Rehomogenise and weigh the separated components (Upper cup : Iso / Lower cup : Polyol), with addition of the necessary residual quantity in the upper cup. Then, put the cups inside the vacuum casting machine.
If a pigment is added, it should imperatively be mixed to the polyol component. A 1 to 3% rate of the total product quantity (polyol + isocyanate) is recommended.
3. Degas the products during 10 minutes, with agitation in the lower cup (Polyol).
4. Stop the agitation and pour the content of the upper cup (Iso) into the lower cup (Polyol).
5. Start the agitation and mix for at least 2 minutes.
6. Slightly release the vacuum in the chamber to a pressure of about 100 hPa (0,1bar).
7. Cast the mixture into the silicone mould until complete filling.
8. Break the vacuum back to atmospheric pressure.
9. Place the mould in an oven at 70°C.
10. Demoulding is possible after :
    - 3 hours at 70°C, depending on the thickness of the part.

Slightly cool down the mould with compressed air before extracting the part. If any distortion occurs, place the part in an oven at 70°C again, so it can take back its original shape.
In order to obtain the mechanical properties of the material, it is necessary to realise a complete curing, demoulding time included, of :

- Optimal curing time : 3h at 70°C + 16h at 100°C + 24h at room temperature

If the part has been demoulded, use a shape holder to avoid any potential distortion of the part during the post-curing step.

➔ **Application process for hand casting :**

1. The support (part or mould) must be totally dry, without any trace of moisture. Make sure that a proper release agent is used.
2. Rehomogenise the polyol and the isocyanate. If a pigment is added, it should imperatively be mixed to the polyol component. A 1 to 3% rate of the total product quantity (polyol + isocyanate) is recommended.
3. Weigh the components and mix them with a spatula or a low- speed rotational mixer.
4. Degas the mixture under vacuum if necessary, depending on the complexity of the part and the details that are likely to retain air bubbles.
5. Cast the product on the support or inside mould. Once the casting is done, let the polymerisation happen at room temperature to help the self-degasification of the product. Then, place the mould in an oven at 70°C.
6. Demoulding is possible after :
    - 3 hours at 70°C, depending on the thickness of the part.

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7. Slightly cool down the mould with compressed air before extracting the part. If any distortion occurs, place the part in an oven at 70°C again, so it can take back its original shape.
In order to obtain the mechanical properties of the material, it is necessary to realise a complete curing, demoulding time included, of :

- Optimal curing time : 3h at 70°C + 16h at 100°C + 24h at room temperature

If the part has been demoulded, use a shape holder to avoid any potential distortion of the part during the post-curing step.

Packaging:

- Parcel of 6 kits of (6 x 0,65kg polyol + 6 x 1kg isocyanate) = 9,9kg
- Parcel of 2 kits of (3,25kg polyol + 5kg isocyanate) = 16,5kg

Storage:

12 months in original and unopened containers, stored between 15 and 25 °C.

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